

transmission modes could be used.

It will be clear to those skilled in the art that modifications may be made to the preferred embodiment described above without departing from the scope of the present invention.

5 What is claimed is:

Sub A 1. A matrix switch made up of a plurality of crosspoint switches, characterized in that:

the matrix defines upstream connections, downstream connections, and user connections and provides bi-directional switching capability between the upstream and downstream connections, between every user and every upstream connection, between every user and every downstream connection, and between every user and every other user connected to the matrix while requiring fewer than half of the number of switching points that would be required by a single, standard NxN crosspoint switch interconnecting all the inputs and outputs.

Sub B 2. A matrix switch made in accordance with Claim 1, and further including a circuit for equalizing signals upon receipt and before introducing the signals to the matrix switch.

20 3. A network, including a user interface for every user and at least one matrix switch as recited in Claim 2, wherein each user interface also includes a circuit for equalizing signals upon receipt of the signals at the user interface from

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the matrix.

4. A network, as recited in Claim 3, and further comprising circuitry to convert signals from common mode to differential mode before sending them out of the matrix over 5 twisted pair wiring.

6 5. A device for the simultaneous, bi-directional transmission of video bandwidth signals in the local area network environment, comprising:

a plurality of user ports;

10 a plurality of channel up ports;

a plurality of channel down ports;

a switching matrix, comprising:

a plurality of interconnected $NC \times NU$ cross-point switches, where NC is the number of channel up ports and NU is 15 the number of user ports; and

a plurality of buffers which define the direction of transmission between the cross-point switches;

wherein said switching matrix permits the simultaneous, bi-directional transmission of video bandwidth signals between 20 users, between users and up channels, and between users and down channels.

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